Music Technology

Week 15

Music Technology Contents

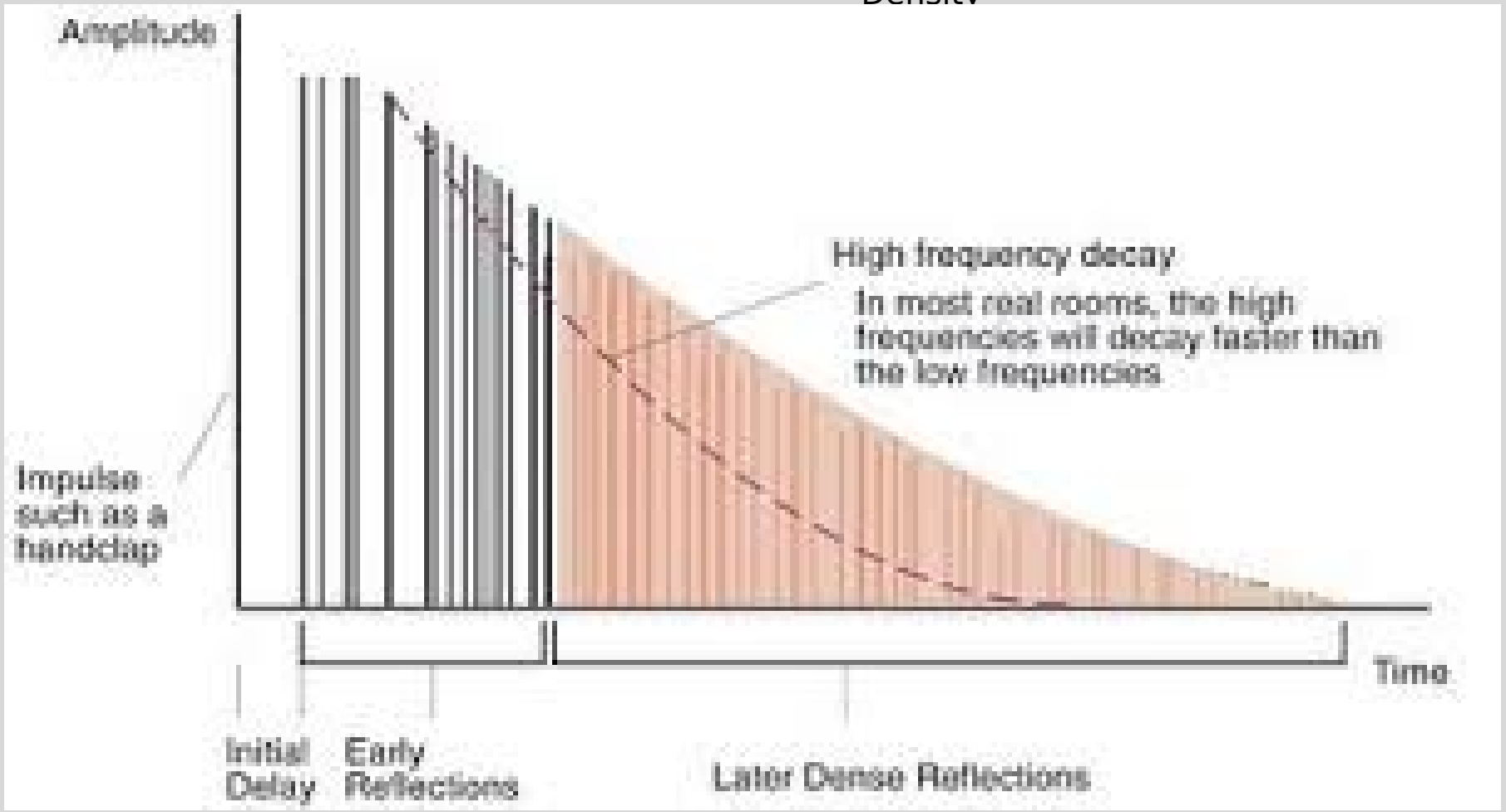
- Review Exam
- Homework
- **Mixing C1**

Reverb Types

Reverb Settings

Reverb Settings

- Decay – how long the reverb tail lasts
- Density
- Pre-delay
- Wet / dry



Production Techniques

Production Techniques

- EQ
- Panning
- Reverbs
- Effects (delay, modulation)
- Distortion
- Filtering
- Pitch changes
- Overdubs / doubletracking

Mastering

Mastering

- Final Step in the production process before distribution.
- EQ
- Compression
- Stereo processing (width)
- Exciters
- Multiband compression
- Noise reduction
- Fade out / fade in / cropping
- Limiting

Synth Settings

Synth Settings

- Portamento
  - Legato / Glide / Short / Long
- LFO
  - Rate / Depth / Shape / what is being modulated

1940s Recording

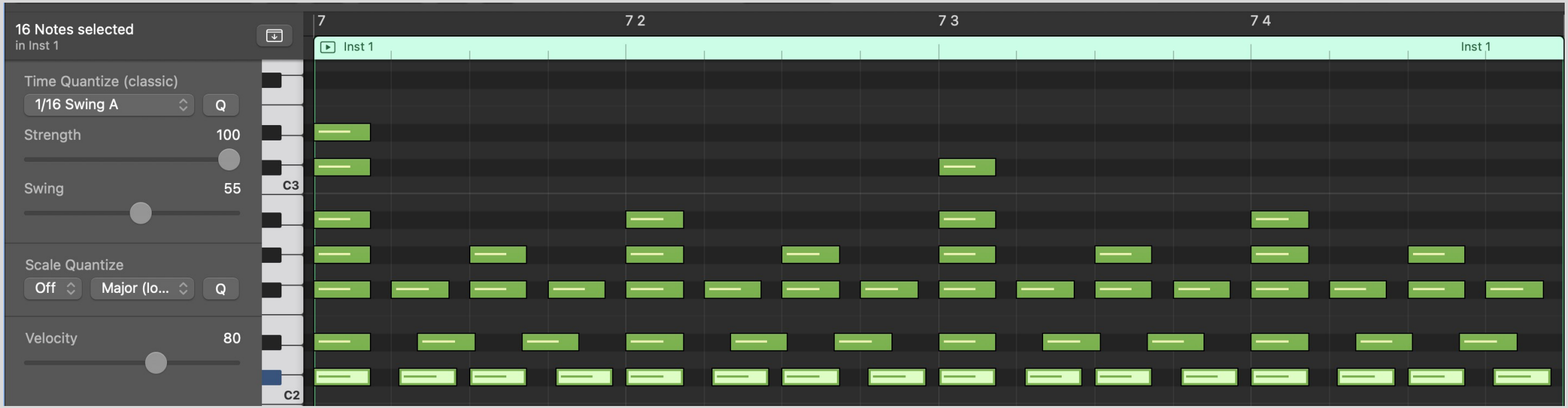
1940s Recording

- Capture Method
- Limitations
- Reverbs
- Noise

Recording Techniques

- Piano
- Drums
- Guitars (Acoustic and electric)
- Vocals

Quantise value = Note Value



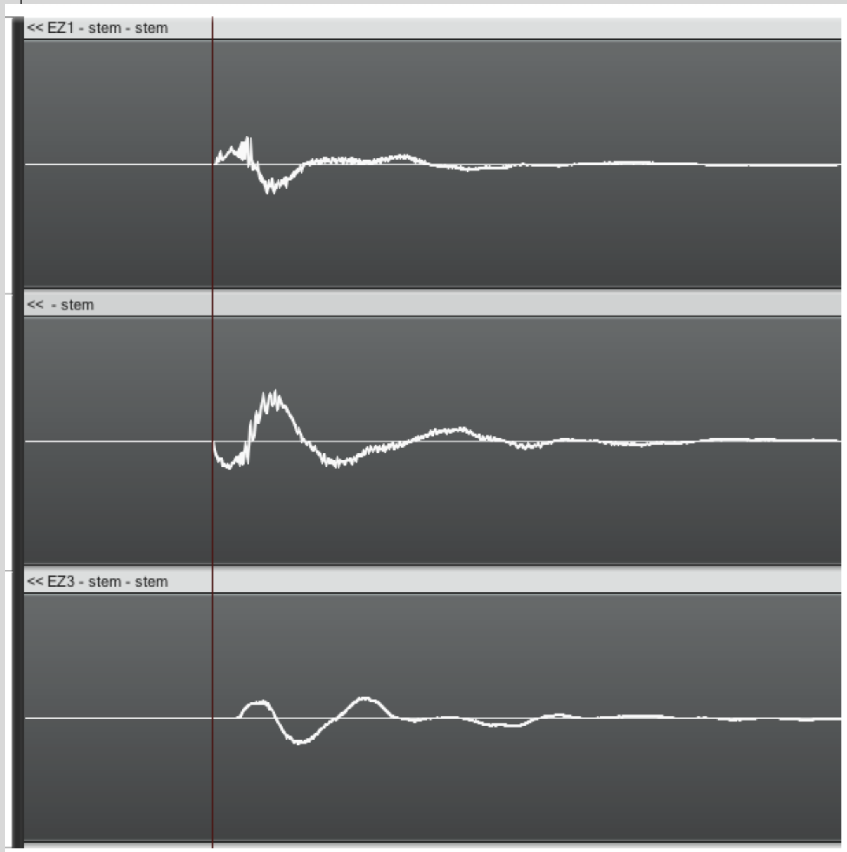
Reverb Types

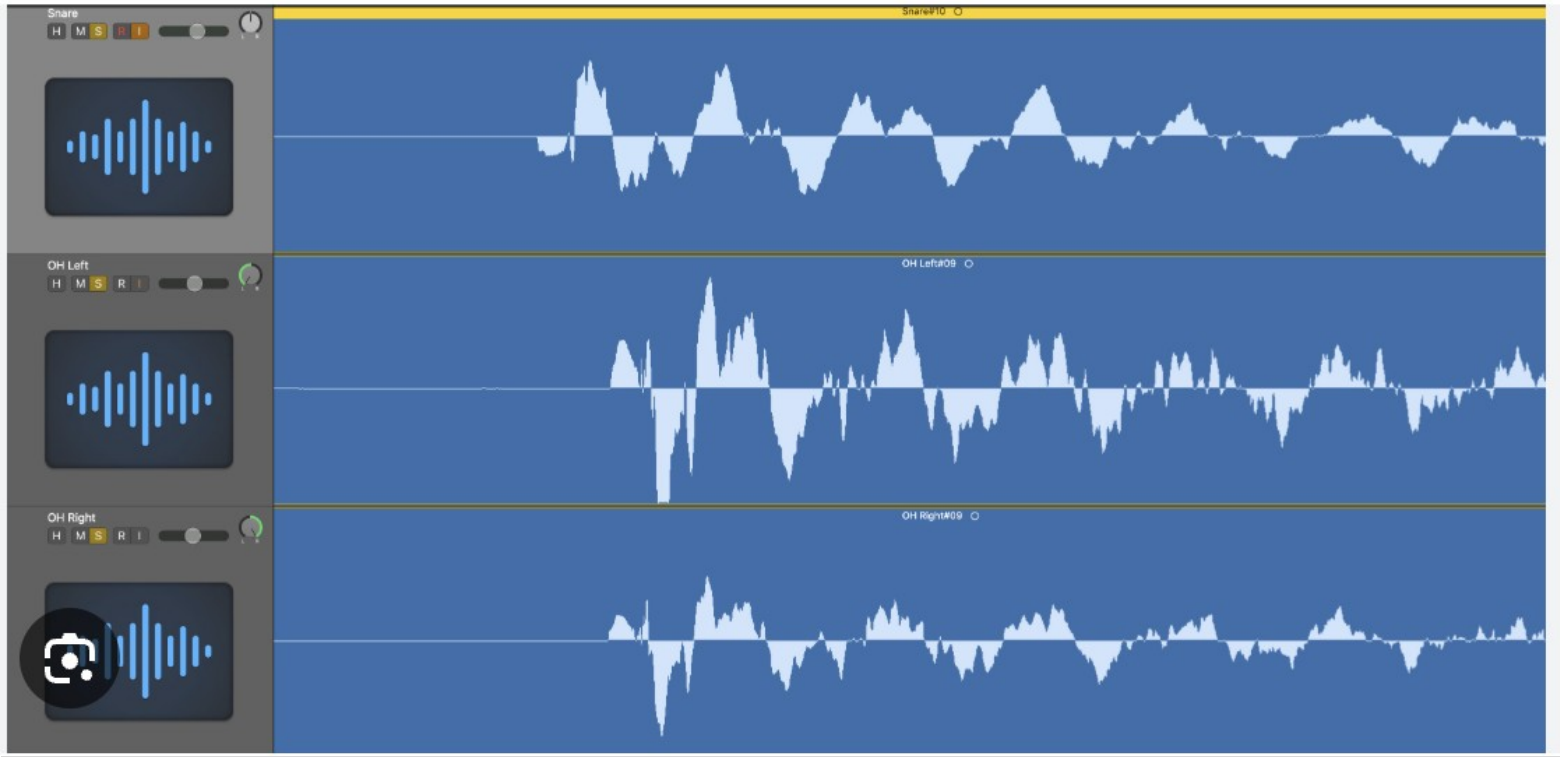
- https://www.sweetwater.com/insync/5-types-of-reverb-explained-hall-chamber-room-plate-and-spring/

Multiband Compression

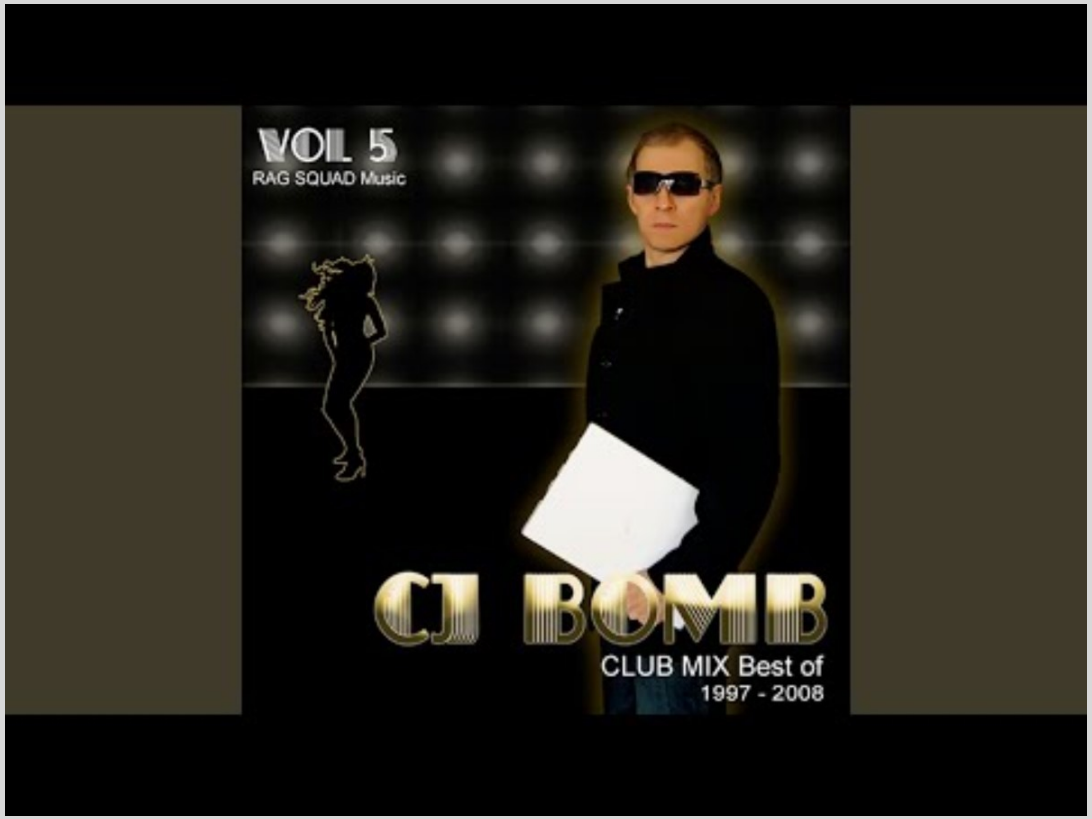
- Splits audio into frequency bands e.g. 2,3,4,5
- Compresses the frequency bands separately
- Benefits, loud bass peak does not squash the vocals
- Removes sibilance without comressing mid-range
- Raises the level even more than standard compressor

Phase alignment - drums





When Doves Cry – Compare the production techniques



Compare the Production Techniques /16

- Capture
- Sampling
- Synthesis
- Effects

A03 (8marks) Content.

AO4 (8Marks) content will draw comparisons between the two recordings and/or evaluate the differences

- E.g. CJ Bomb uses samples of the Prince track (A03) This means there is less variation in the performance than in the live recording in the prince track. (A04)

Comparison	Evaluation
In the Prince there is no bass, in the CJ Bomb the bass has been sequenced	This fills in the low frequencies of the CJ Bomb mix and leaving the Prince sounding sparse
In the Prince there is a wider dynamic range than in the CJ Bomb track	References to: Loudness wars / sounds good in clubs / differences in eras
The Prince has relatively sparse production while the CJ Bomb has more parts	Having more parts allows bigger dynamic contrast and removal of parts prepares drops
The CJ Bomb has a longer delay with more feedback that has been added to the vocals in the chorus	This gives the chorus more dynamic lift and emphasises the rhythmic pulse
CJ Bomb track uses filter sweeps across multiple parts while Prince has much less filtering	To create dynamic builds leading into new sections

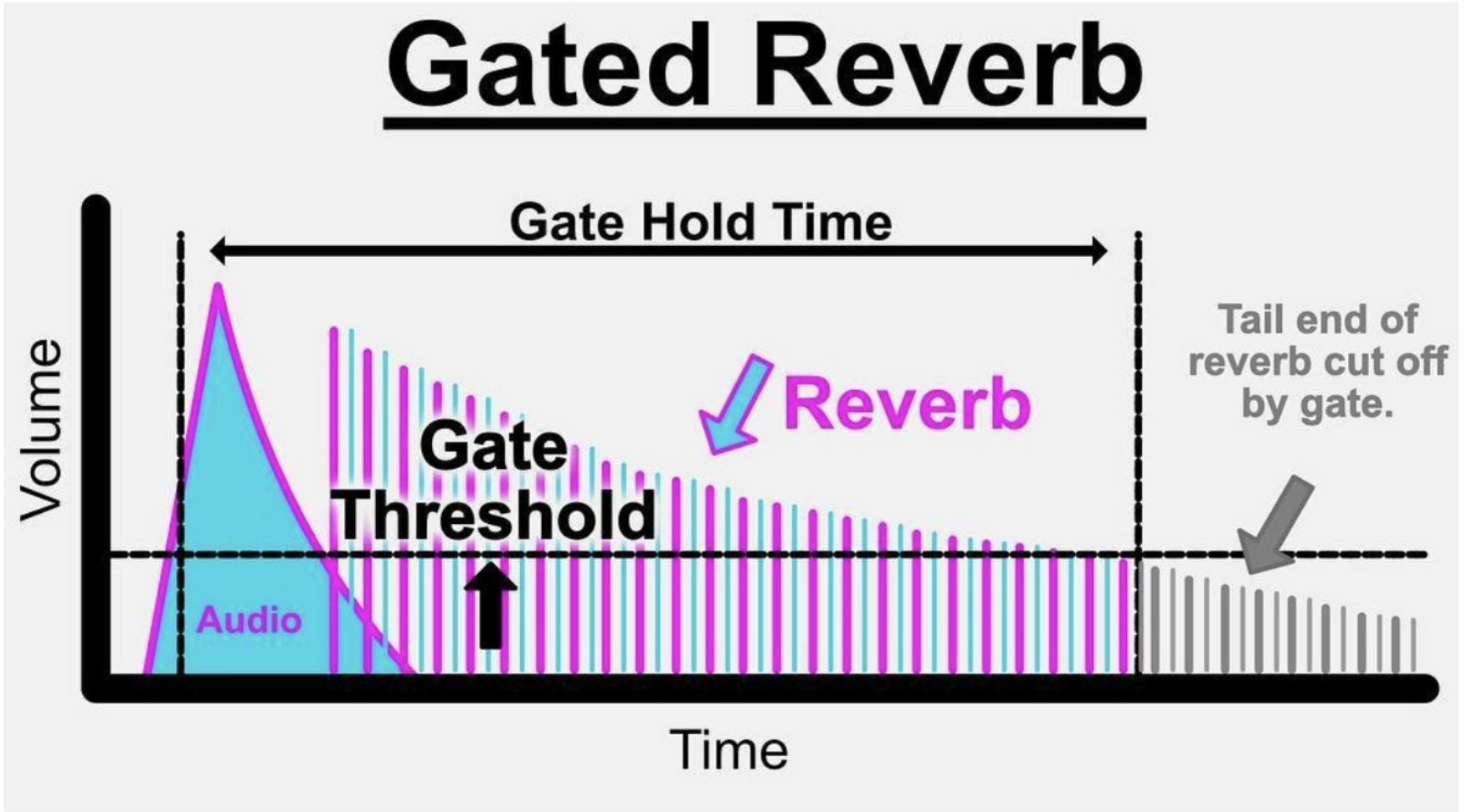
- The original would has vocals which would have likely been recorded with a large diapraghm condenser mic in an isolated vocal booth overdubbed over the instrumental track of the song. A03 The remix samples the vocal from the original and sounds like it may used varispeed a bit to speed it and pitch it up. A03 The remix slows down the vocal at 3:05 then loops the end of the vocal line. The remix also adds a delay effect to the vocal. A03 how/why add a delay
- Both tracks demonstrate how to create different stereo fields (need to give some examples e.g. Panned guitar and vocals in prince) and how different production techniques shape a song, Prince's demonstrating how emotion and passion can be captured into a song, where's Bomb's focuses on creating a more modern-genre and club-fitting song using different his production techniques.
- The original features a linn drum machine which would have been recorded to the tape. A03 The remix has drums which were sequenced in the DAW. A03 This means that both versions drums will have no variation in their tempo or dynamics and so lack a human feel. A04

- Prince creates a steady tempo of 127bpm, driven by the LinnDrum machine, A03 a personal favourite of Prince's. Say more about Linn drum. Sequencer, using real drum samples. Deemed to be more realistic than 808 or 909 from Roland. Popular in 1980s pop. The drum beat is short and snappy, even with reverb added on top, that's been gated above a certain threshold. A03 how does the gated reverb work? why was it used e.g. to make the drums sound powerful without the reverb tails masking the next hit. CJ bomb increased the tempo to 130bpm, making it more energetic and fit for the genre, adding a more consistent kick and snare hit, creating a more consistent, quick drive to the track. A03 Easier to beat mix in the club setting.
- Prince also utilises a live recorded electric guitar with clear distortion whereas CJ Bomb has no live recorded instruments. AO3 No AO4 points here as you have said what the reasons/methods/impact of any of these things are.
- The remix is likely much more compressed than the original and probably uses a limiter A03 due to it being a dance song so would need to be louder to compete with other songs when played at clubs. A04

- Princes track is quite thick in texture, with the drum machine percussion driving the rhythm of the song, instead of a bassline. A03
- Alongside this, he uses a heavily distorted electric guitar riff and plucky synthesiser. A03 This minimalistic approach gives It a raw, unique feel. How was the guitar done? What technology was used? Gives rock element to pop track. In contrast to this, CJ bomb's track is thicker in texture through added instrumentation like a driving bassline and added percussion, and effects like delay and reverb. A03 Give times/examples of these e.g. delay on snare at 0:24 These added elements are common with the genre, and align it with club music, where it would typically be played. A04
- Prince utilises sequenced drums using a Linn LM-1 AO3 and synthesisers recorded to tape AO3, whereas CJ Bomb utilises electronic drums sequenced in a DAW alongside a bass and synth part both also sequenced in a DAW. AO3 No AO4 points here as you have said what the reasons/methods/impact of any of these things are.
- DJ Bomb uses a low pass filter sweep at 2'53 AO3

- The remix has reversed cymbals A03 to transition into new sections of the song. A04 How is this done? Reverse function on a sampler? or reversing tape
- The remix has a long drum intro A03 (mention drums used e.g. 4 to the floor Kick, 16th note hi-hats, snare on 2 and 4) which would have been for DJ's to match the song with the previous song playing at the club and then transition them so that the music doesn't stop playing. A04
- The original has the vocal doubletracked A03 give a time e.g., at 0:33 and harmonised and pans these vocals across the stereo field which thickens the vocal A04 and makes it feel the mix more.**? Widens the stereo image?**
- The original features an intro with an electric guitar with distortion on it. A03 This distortion could either have been achieved by turning the gain on the amp up really loud so the signal distorts or by using a distortion pedal. A04 Therefore the track mixes genres, with rock/metal guitar tone over 80s pop beat and RnB vocal.

- Prince leaves a lot of room for his vocals to thrive in the track A03 which enhances the emotional feel and connection to the lyrics of the song. A04 whereas CJ bomb limits the expansion of Princes vocals that have been sampled into the track, creating less space for them amongst the added features. A03 Level is higher on the lead vocal in Prince track, to feature the vocal delivery and lyrics, which is appropriate to pop. CJ bomb track has vocal at a lower volume, prioritising the louder drum part, which is appropriate for dance music.
- The original was recorded to analogue tape, likely 24 track, while the remix is recorded in a DAW. A03 This means that the original could only have 24 tracks recorded before it would have to start bouncing down tracks which reduces their dynamic range A04 and adds more hiss while the remix could have as many tracks as it needed. A04
- Prince utilises overdubbed vocals which DJ Bomb samples (seen also at 2'53) AO3 No A04 Point


Gated Reverb
Gate Hold Time
Volume
Reverb
Gate
Threshold
Audio
Tail end of
reverb cut off
by gate.
Time

Music Technology Contents

- Filters LPF/HPF
- Using Samples
  - What do you need to consider?
  - How can you tell the difference between a sample and a live performance?
- Production techniques?

Task

- Make a 16 bar track using loops – dance music works best.
- Add and automate filters.
- Add 3 production techniques: e.g. pitch shift, reverse, reverb, eq, layering

Carpenters - Happy

- Panning?
- **Effects?**
- **Bus Processing - Single channel**
  - **One fader for level/rides**
  - **One channel EQ affects all**
  - **One pan pot affects all**
  - **Limited no. of hardware processors**
    - **One Compressor to control dynamics**
    - **One reverb**

RECORDING METHOD

Mono to Stereo

- Add stereo Reverb
- Eq each side differently
- Stem splitter then pan
- Stereo spreader (hardware or software)
- Stereo delay

WRECKING
CREW

Wrecking Crew

Frank Sinatra

- Room treatment
- Overheads
- Omni directional

BEATLES

QUEEN

Thom Yorke

- Isolation
- Headphones (closed back)
- Close mic

LOUIS ARMSTRONG

Wynton Marsallis

- Off-axis
- Condenser
- Ambient room
- Dead room
- Isolation
- 30-60cm
- Cardioid

Reverbs

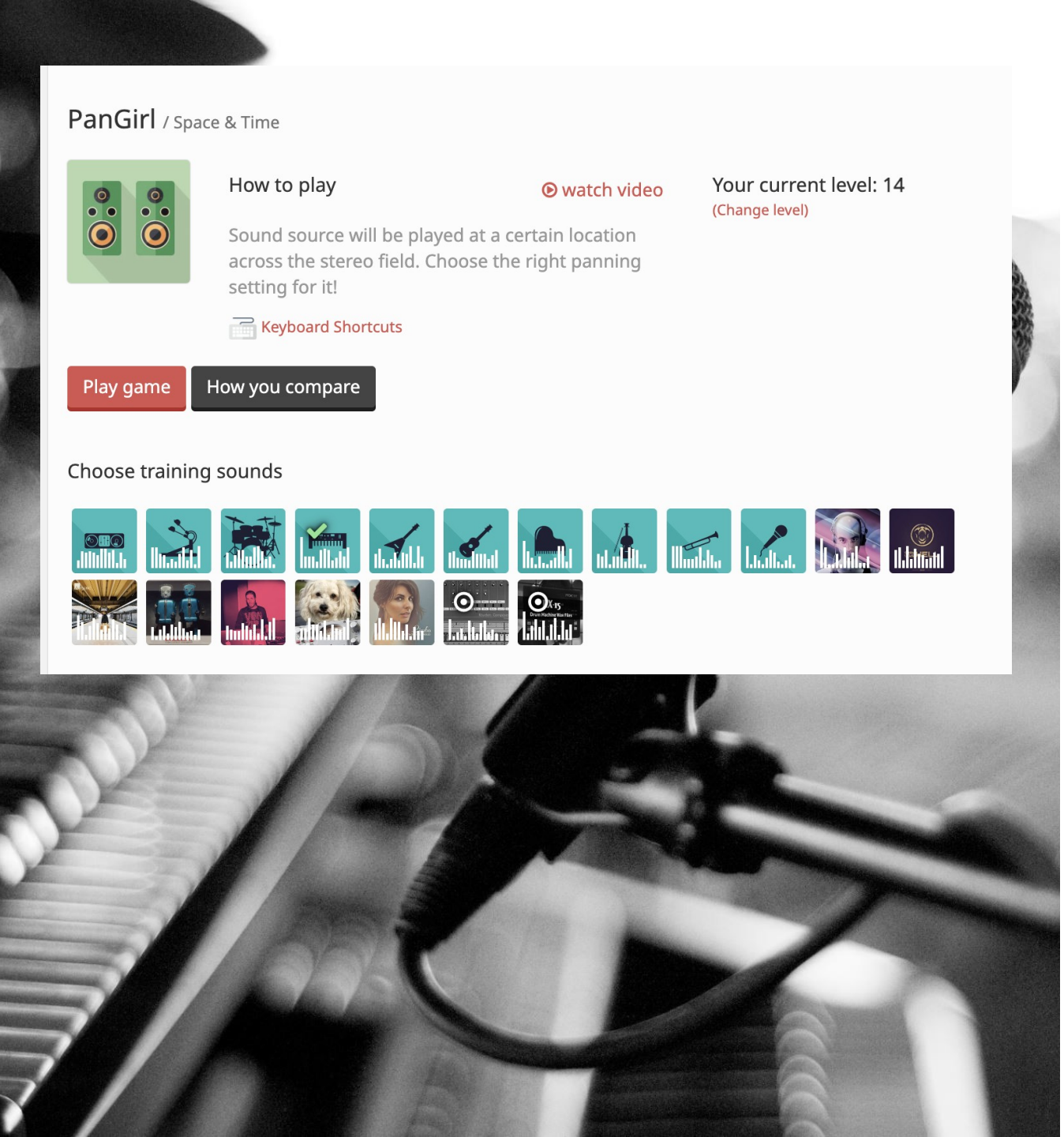
- https://www.sweetwater.com/insync/5-types-of-reverb-explained-hall-chamber-room-plate-and-spring/

- Hall – concert hall
- Chamber – specially designed studio chambers
- Room – normal acoustic space
- Plate – Large metal plate that vibrates
- Spring – spring that vibrates

Listening Exercise – Beach Boys

Take notes for the homework.

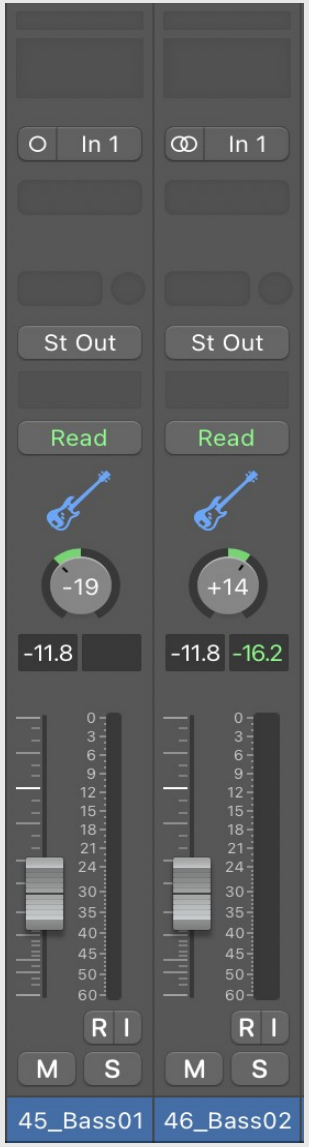
- Instrumentation?
- Panning?
- Effects? E.g. Delay
- Recording Process (e.g. Mono, Multitrack Tape, Digital) and the impact.


PanGirl / Space & Time
How to play
watch video
Your current level: 14
(Change level)
Sound source will be played at a certain location across the stereo field. Choose the right panning setting for it!
Keyboard Shortcuts
Play game
How you compare
Choose training sounds

Stereo Field

How much signal comes out of each speaker

Mono
Left
Right
Wide
Narrow



Drum Sound

Wet/Dry
Large/small (dymamic range)
Bright/Dark
Mono/Stereo
Left/Right
Clean/Distorted
Wide/Narrow
Hifi/Lofi

Recording Techniques

Single Mic / Multiple mics

Single Take / Multiple Takes (overdubbing)

Single Track / Double Track

One Room / Isolation

Close mic / Room mics

Bouncing using tape

- Bouncing down using tape, also known as ping-pong recording, is a technique for combining multiple tracks into one on a tape recorder to free up tracks for recording. It's a useful method when using tape recorders with a limited number of tracks, and can also simplify mixdowns.
- Here's how to bounce down using tape:
- Leave track 4 empty on the tape recorder.
- Record tracks 1–3.
- Set the channel switch to tape on channels 1–3.
- Pan all tracks to the right.
- Set the faders and master fader to a good level.
- Set the monitor, select line out, and switch to mono.
- Set the record function switch of track 4 to bus R.
- Press play and listen to the mix of tracks 1–3.
- Make any necessary fader or EQ adjustments

Tape Bouncing

Wow / Flutter
Destructive / Non-Destructive
Noise Floor
Saturation
Frequence Response
Track Count

Music Technology - Q5 / 15

	AO3 - Knowledge /5	AO4 - Analysis /10
Capture		
Sampling		
Synthesis		
Effects		

Music Technology - Pink Floyd

	AO3 - Knowledge	AO4 - Analysis
Capture	• Tape • DAW • Live vocal / sampled vocals	• noise, saturation, track count, Tape Hiss, Narrow frequency range • Sequencing/programming. Broad frequency range. Time and pitch controlled in the DAW. Tempo change/dance genre. • Repetition vs unique performance
Sampling	• In Remix Guitar parts are reused • Vocals reused • Playground noises	• Faster tempo. Alternates with new synth parts. • Keeps the lyrical content. • Recorded outside the studio on tape then added to the multitrack.
Synthesis	• Synth pads / layers add to sample of original track. • Use of keys (hammond) as backing for guitar solo	• LFOs, white noise, filters, envelopes (ADSR)Use of filters adds development. • Tremolo/modulation create a sense of movement
Effects	• Reverb • Compression • Filters	• 0'19'' Long reverb on vocal – drums more dry Space/depth • 0'02'' Drums are punchy and loud • Drums are filtered at 2'05'' High cut automated to create build.

Music Technology - Q5

	AO3 - Knowledge	AO4 - Analysis
<u>Capture</u>	• Original is captured through mics and recorded live. • Remix is sequenced in a DAW. • Remix takes stems from the original as the basis for the track. • The remix has lots of vocal layers taken from the original giving the impression of overdubbing. • Piano is used in the remix but it is sequenced and isn't sampled from the original.	
Sampling	• No sampling in the original, all acoustic instruments. • The samples in the remix are made from stems from the original. • Vocal samples are looped and stuttered in places. • Vocals from the original are also 'scratched'. • Drums are looped from the original.	

Music Technology - Q5

	AO3 - Knowledge	AO4 - Analysis
Synthesis	• No synthesis in the original; all acoustic instruments. • Synths replace the horn section in places from the original. • Synth bassline replaces the double bass from the original.	
Effects	• There is limited use of effects in the original. • Vocals have the most processing on them with reverb and compression in the original. • Delay is used most prominently on the vocals in the remix. • Stereo widening/ADT is applied to the vocals in places in the remix. •Automated filters are used in the remix.	

Listening Exercise – Captain Beefheart

Take notes for the homework.

- Instrumentation?
- Panning?
- Effects? E.g. Delay
- Recording Process in 1974 (e.g. Mono, Multitrack Tape, Digital) and the impact.

Acoustic recordings
1877

Electronic Mics 1925

Magnetic tape 1945

Digital 1975

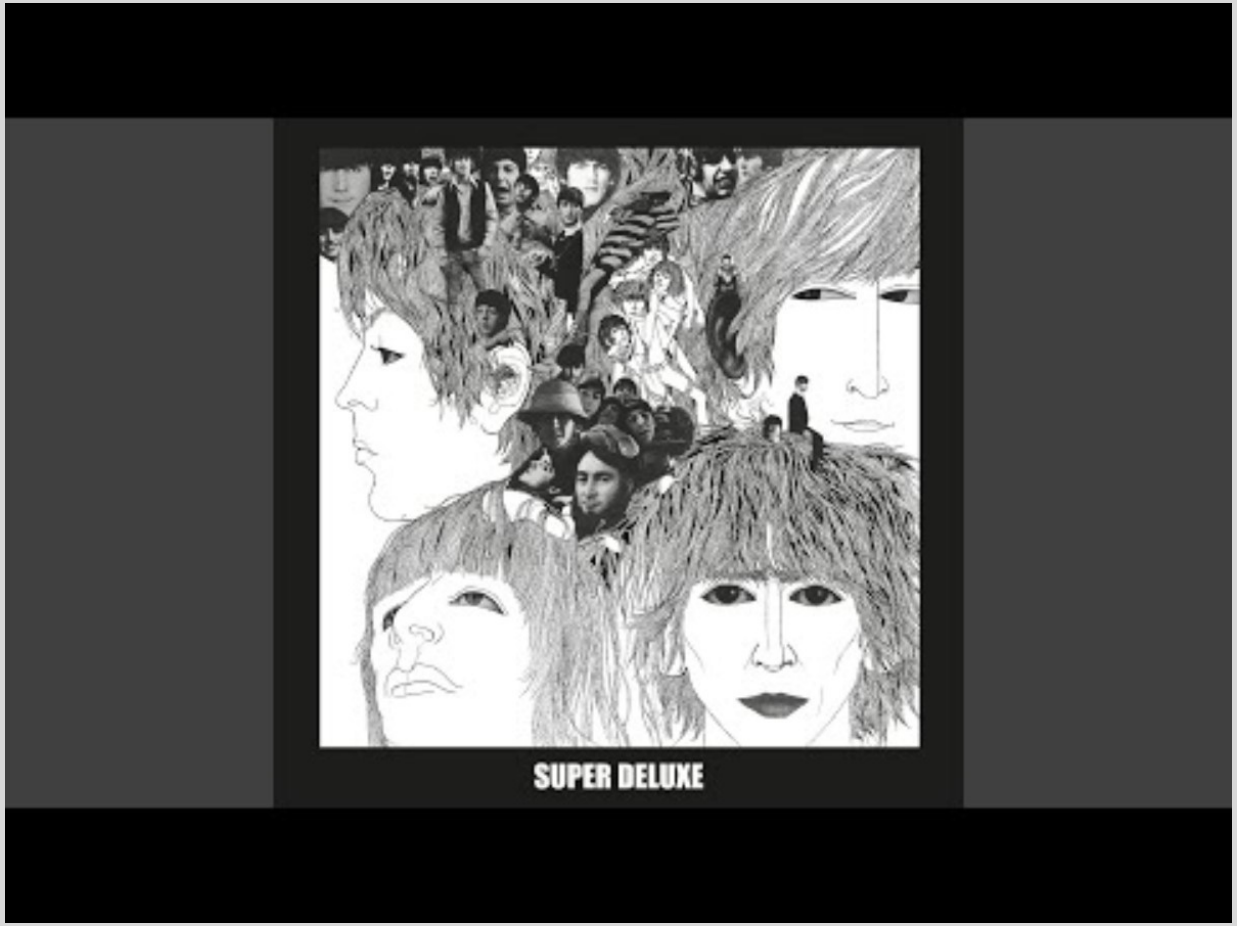
Dynamic Processing

- Compressor
- Limiter
- Gate
- Expander

Listening Exercise – Tomorrow Never Knows

- Dynamic Processing?
- Use of Tape?
- Production Techniques?
- Recording process?
- Effects?

- Watch the sound from 13.40



Listening Exercise – A Little You 1955

- Recording process?
- Characteristics of a 1950s recording?
- Instrumentation
- Dynamic Processing?
- Production Techniques?
- Effects?
- Mastering?
- Modern Remastering?

Listening Exercise – A Little You

- The U 47, introduced in 1949, was a technical revolution and is still considered the indisputable reference for perfect sound. With its well-balanced, extremely vivid response and excellent low-noise performance, this tube microphone raised the bar to a whole new level. Although production had to be discontinued in 1965, the U 47 has remained an extremely sought-after studio microphone that no world-class studio should be without.
- The U 47 is the first Neumann microphone developed after the Second World War. Instead of reissuing pre-war models, Georg Neumann decided to make a fresh start, as tube technology in particular had made enormous progress. This meant that the housing could be designed relatively compact – by the standards of the time. Electronic polar pattern switching between cardioid and omnidirectional was a complete novelty. Swapping capsule heads was no longer necessary, and the capsule could be integrated into the microphone housing. This was the birth of the modern studio microphone.

Listening Exercise – Praise You

- Fatboy Slim used Akai S950 samplers on his 1999 hit song "Praise You".

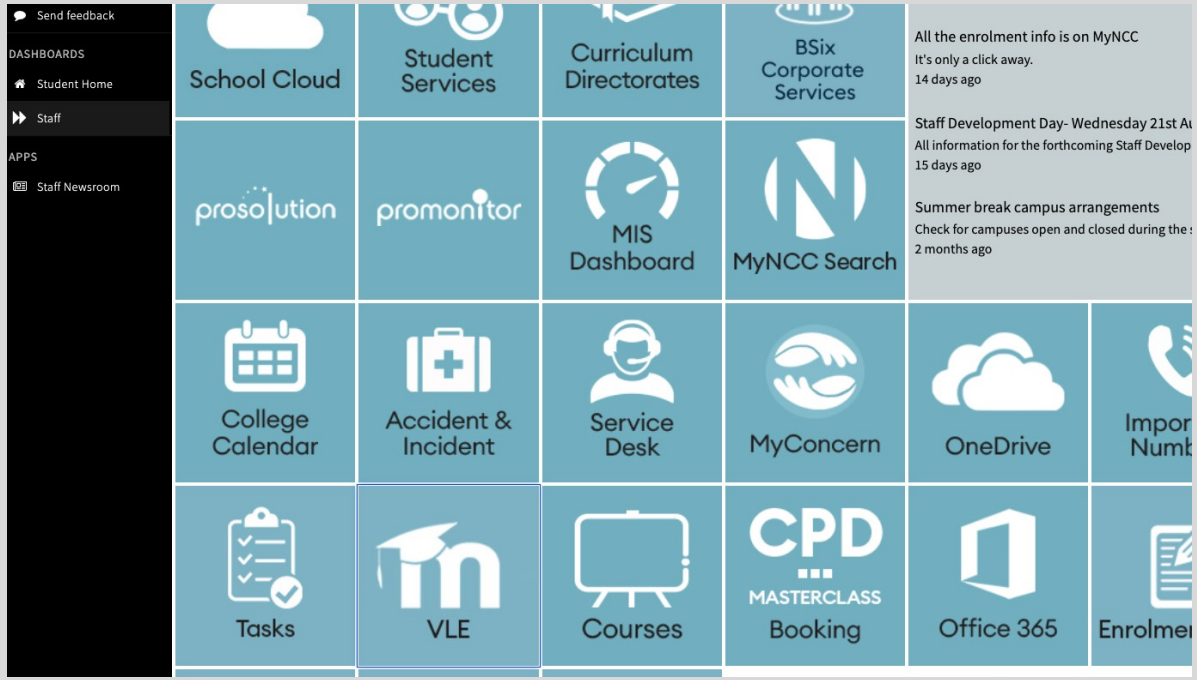
- The song features a prominent vocal sample from the opening of "Take Yo' Praise" by Camille Yarbrough, as well as a prominent piano sample from the track "Balance and Rehearsal" from a test album entitled Sessions released by audio electronics company JBL in 1973.

Listening Exercise – Praise You

- What are sample rates?
- Audio sampling is the process of transforming a musical source into a digital file. Digital audio recording does this by taking samples of the audio source along the soundwaves at regular intervals. The more samples you take - known as the ‘sample rate’ - the more closely the final digital file will resemble the original. A higher sample rate tends to deliver a better-quality audio reproduction.
- The audio bit depth determines the number of possible amplitude values we can record for each audio sample.

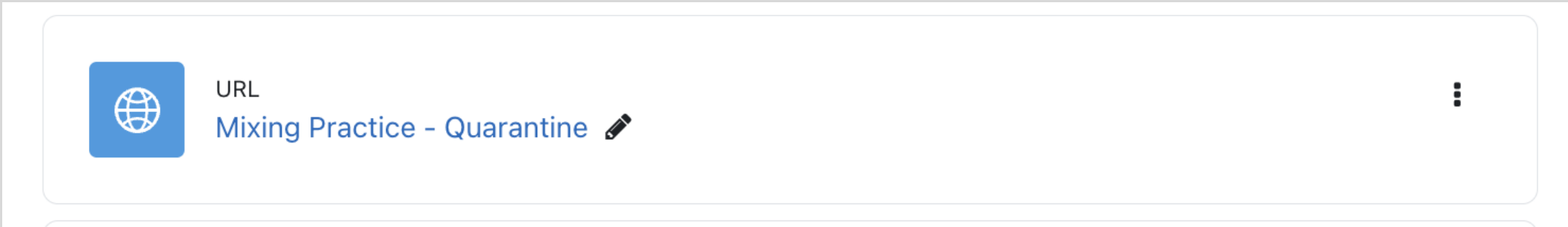
Listening Exercise – Praise You

Mixing Task

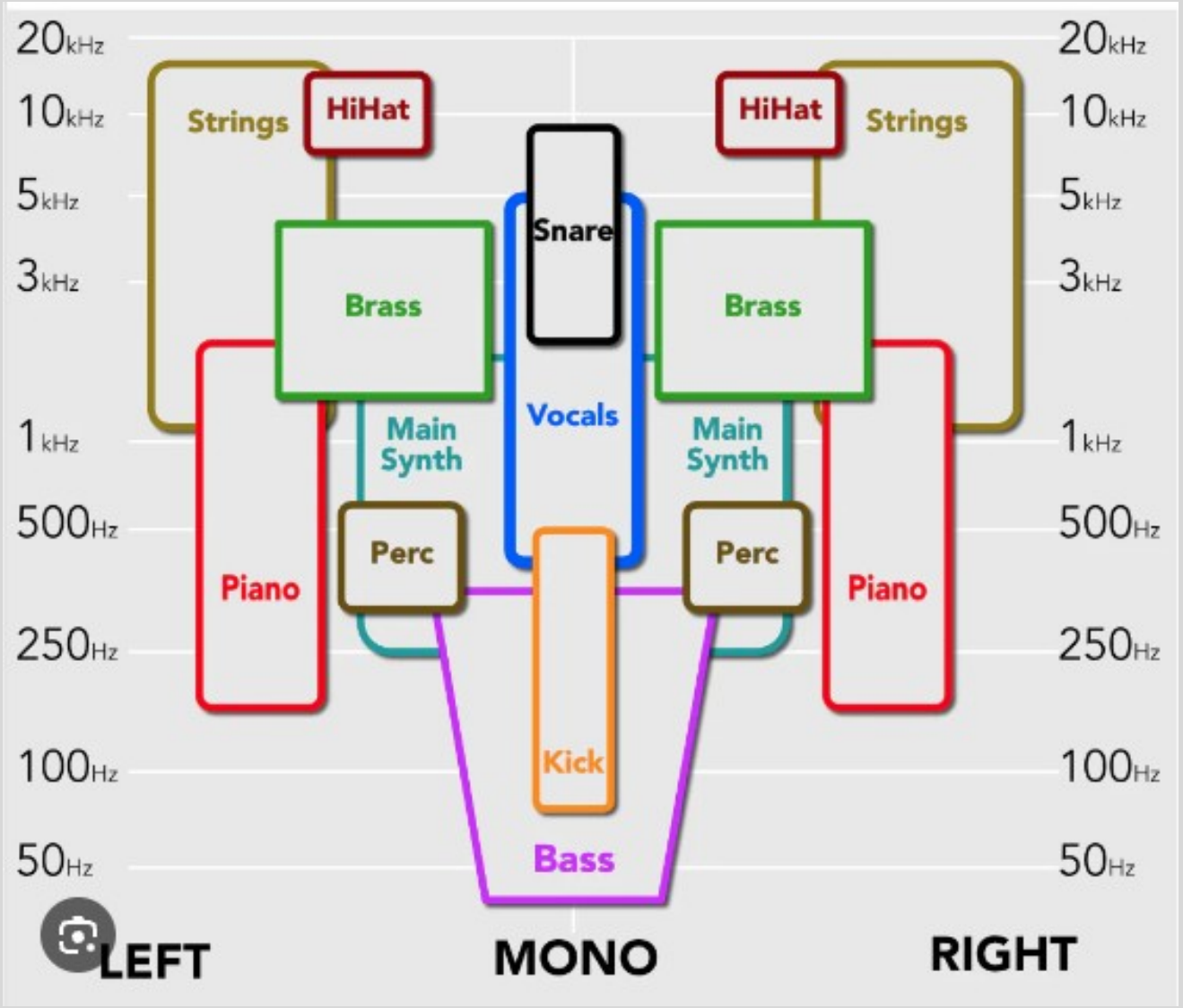


What is the Aim of Mixing?

Exporting a mix.



Mixing

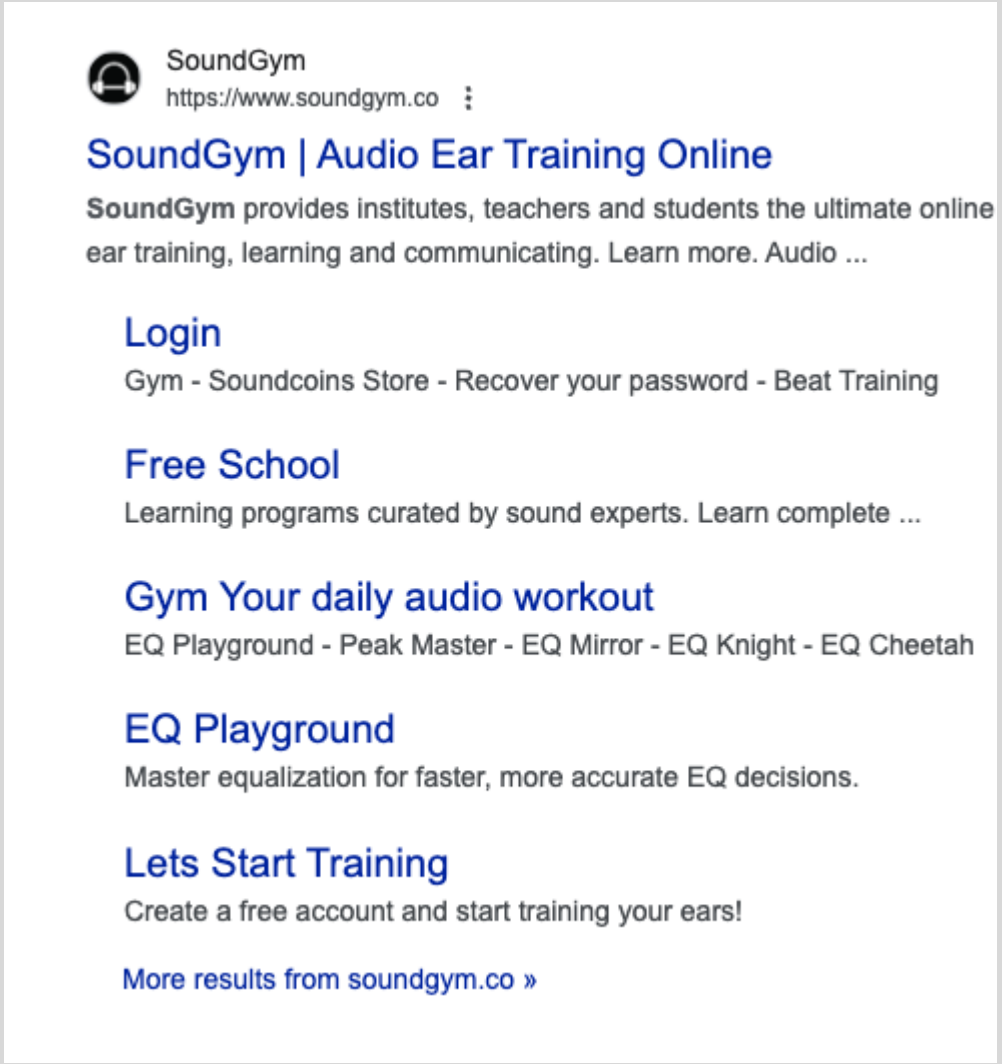

20kHz
10kHz
5kHz
3kHz
1kHz
500Hz
250Hz
100Hz
50Hz
Strings
HiHat
Brass
Snare
Vocals
Main Synth
Perc
Piano
Kick
Bass
HiHat
Strings
Brass
Main Synth
Perc
Piano
LEFT
MONO
RIGHT

Mixing Task

- Download the zip file from the vle
- Create a folder on the desktop called 'my father never loved me'
- Put the zip file in there and expand.
- Create a logic project and save it into the same folder
- Import the audio files (drag and drop)
- Balance the faders (turn them all down the bring them up slowly one at a time
- Pan the instruments
- Export the mix (16bit Wav)

Sound Gym

- Go to Soundgym
- Create an account with a non-college email e.g. gmail

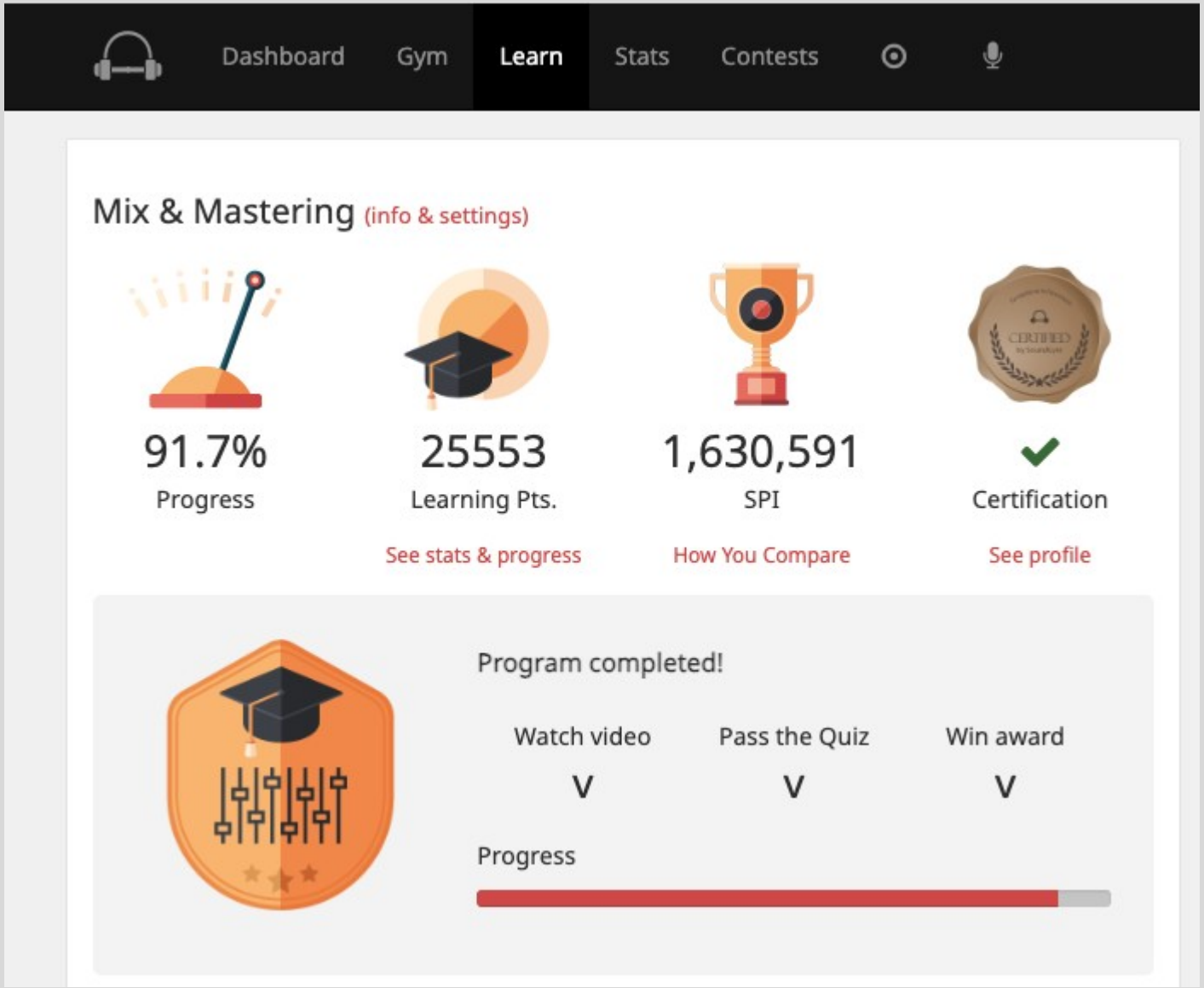

SoundGym
https://www.soundgym.co
SoundGym | Audio Ear Training Online
SoundGym provides institutes, teachers and students the ultimate online ear training, learning and communicating. Learn more. Audio ...
Login
Gym - Soundcoins Store - Recover your password - Beat Training
Free School
Learning programs curated by sound experts. Learn complete ...
Gym Your daily audio workout
EQ Playground - Peak Master - EQ Mirror - EQ Knight - EQ Cheetah
EQ Playground
Master equalization for faster, more accurate EQ decisions.
Lets Start Training
Create a free account and start training your ears!
More results from soundgym.co »

Mixing

- Download the zip folder from the VLE
- Enrol on the sound gym mixing and mastering course; watch the videos that fit with what you need.
- Practice mixing.

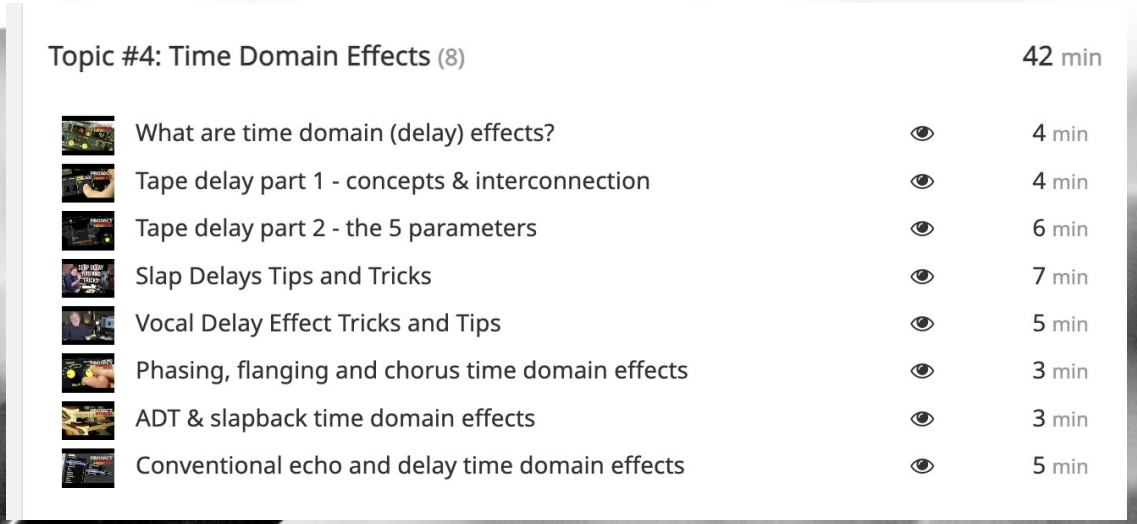
Sound Gym

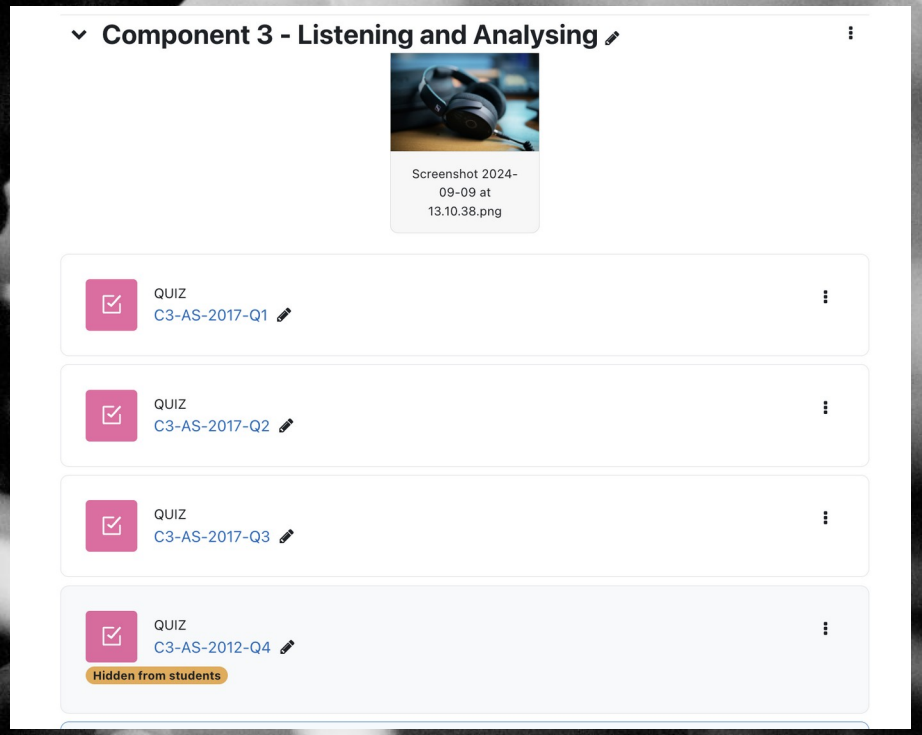
- Navigate to the learn section and enrol on mix and mastering

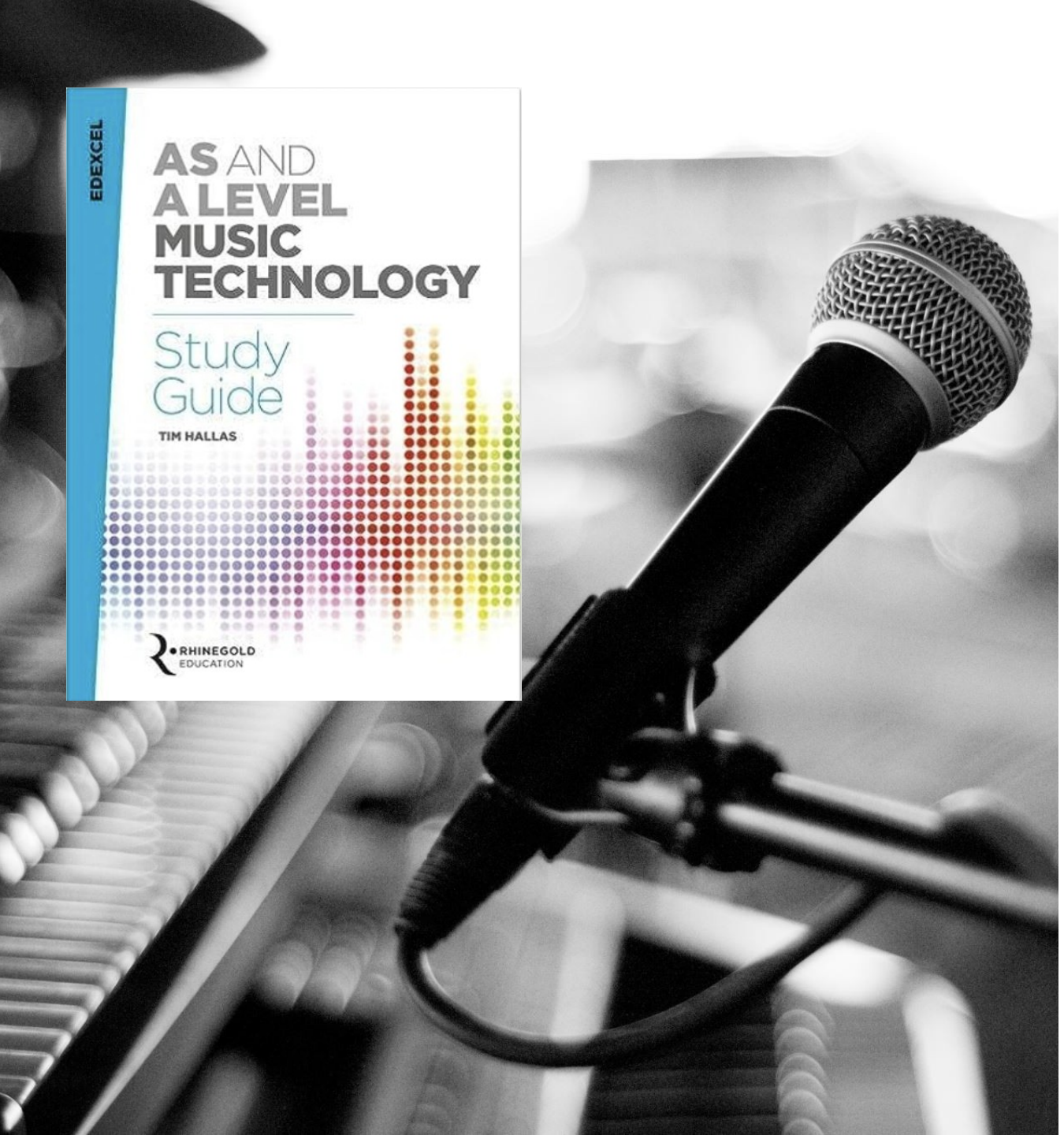


Homework

- Watch the videos for topic 3 for homework.
- Do the moodle/vle quiz

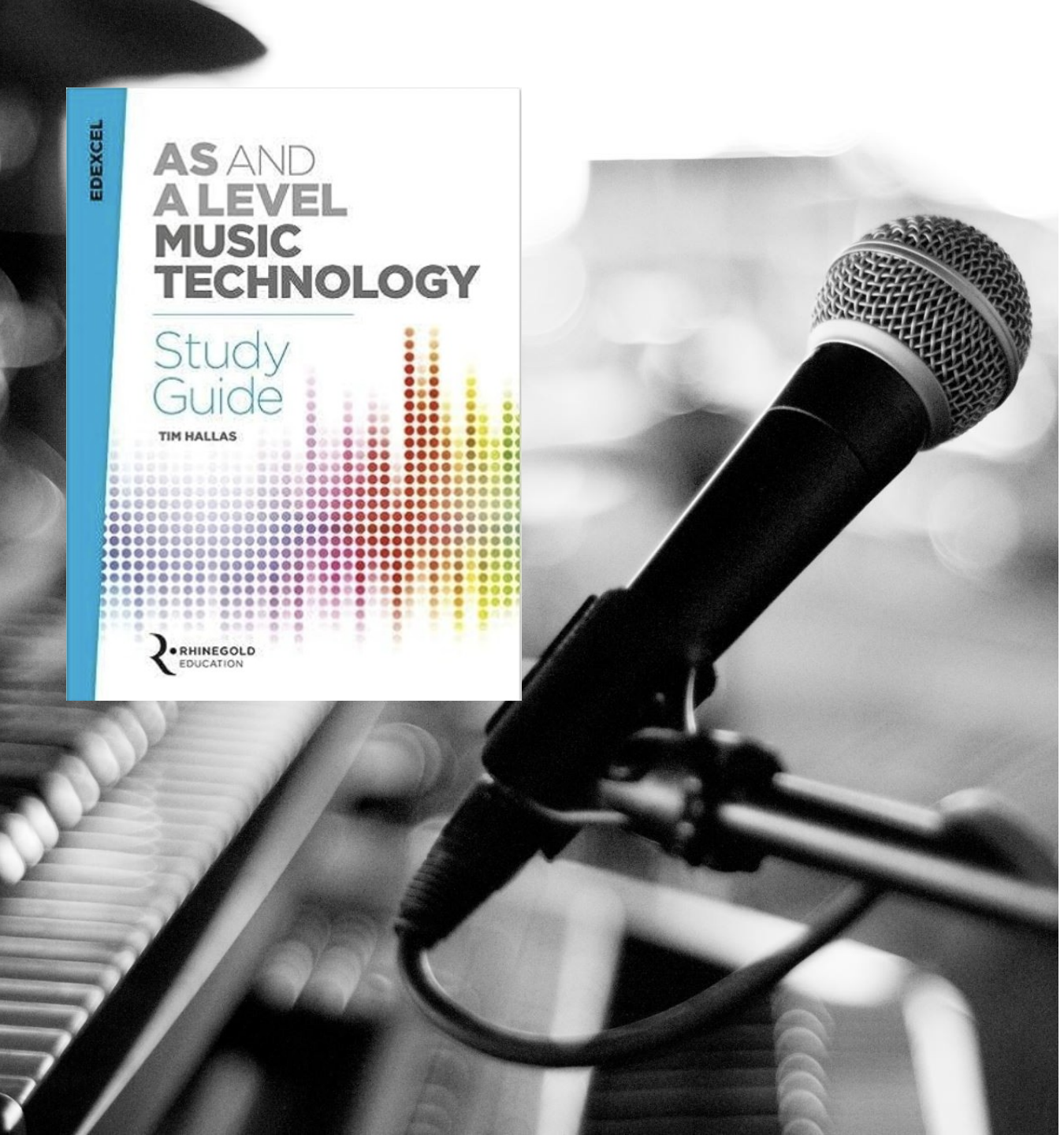

Topic #4: Time Domain Effects (8)
42 min
What are time domain (delay) effects?
4 min
Tape delay part 1 - concepts & interconnection
4 min
Tape delay part 2 - the 5 parameters
6 min
Slap Delays Tips and Tricks
7 min
Vocal Delay Effect Tricks and Tips
5 min
Phasing, flanging and chorus time domain effects
3 min
ADT & slapback time domain effects
3 min
Conventional echo and delay time domain effects
5 min





Vocab test

- Learn key terms from p161 in the glossary



Textbook + Folder

- Go to the library and get a copy of: Music Technology Study Guide
- Get a Folder to hold all of your paperwork
- Bring a pen and paper or notebook to the lessons.